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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,872	03/12/2004	Andy L. Lee	ALTRP193/ A1047	8348

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EXAMINER	
CRAWFORD, JASON	

ART UNIT	PAPER NUMBER
2819	

DATE MAILED: 03/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/799,872	LEE ET AL.	
	Examiner	Art Unit	
	Jason Crawford	2819	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18-26* is/are allowed.

6)☒ Claim(s) *1,2,7,16,17 and 27* is/are rejected.

7)☒ Claim(s) *3-6, 8-15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 3 and 6 recites the limitation "the carry signal" in the third and fifth lines of Claim 3 and in the fourth and sixth lines of Claim 6. There is insufficient antecedent basis for this limitation in the claim.

In regards to this objection, the Examiner assumes the Applicant will address these minor issues and will examine them on the basis of "a carry signal", which will provide sufficient antecedent basis.

2. In regards to Claim 18, the Examiner respectfully asks the Applicant to change the word "a" located before "first mode" and "second mode" on lines 5 and 7 of the claim respectively, and replace them with "the" since antecedent basis was previously established in line 4 of the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 7, 16 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Cliff (US 5689195).

In regards to Claim 1, Cliff discloses of a carry chain (Fig 11, Column 21 Lines 8-10) in a logic block array (10, Fig 1) having a set of logic elements (20a-f, Fig 11) wherein the carry chain comprises a first path (carry signal 54 through 20b) connecting a first series of logic elements (30, Fig 1) in the logic array block (10), wherein the logic elements in the first series is a subset of the set of logic elements in the logic block array (30 is a subset of 20), a second path (carry signal 54 through 20c) connecting a second series of logic elements (30) in the logic array block wherein one or more of the logic elements (30) in the second series are not in the first series (each 30 in 20a is not in 20b, etc.). (Fig 1, 11, Column 5 Lines 14-20, 33-36 and Column 20 Lines 54-57)

In regards to Claim 2, Cliff discloses of the logic elements of the first series are a subset of the logic elements of the second series (Inherent since they are comprised of the same type of logic blocks 30). (Fig 1, 11)

In regards to Claim 7, Cliff discloses of a first multiplexer (750a) configured to bypass a first portion of the carry chain (20b) wherein the logic elements in the first series (30) are located in the first portion (20b) and a second multiplexer (750b) configured to bypass a second portion of the carry chain (20c), wherein the logic elements in the second series (30) are located in the second portion (20c). (Fig 1, Fig 11 and Column 20 Lines 54-67, Column 21 Lines 1-7)

In regards to Claim 16, Cliff discloses of a programmable logic device (10) including the carry chain of Claim 1. (Fig 1, Column 5 Lines 14-20)

In regards to Claim 27, Cliff discloses of a method of forming a carry chain (Fig 11, Column 21 Lines 8-10) in a logic array block (10) having a set of logic elements (20a-f, Fig 11), the method comprising of forming a first path (carry signal 54 through 20b) connected a first series of logic elements (30, Fig 1) in the logic array block (10), wherein the logic elements in the first series are a subset of the set of logic elements in the logic array block (30 is a subset of 20) and forming a second path (through 20c) connecting a second series of logic elements (30) in the logic array block, wherein one or more of the logic elements in the second series are not in the first series (each 30 in 20a is not in 20b, etc). (Fig 1, 11, Column 5 Lines 14-20, 33-36 and Column 20 Lines 54-57)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cliff (US 5689195) in view of Park (US 6359468).

In regards to Claim 17, Cliff discloses of a carry chain (Fig 11, Column 21 Lines 8-10) in a logic block array (10, Fig 1) having a set of logic elements (20a-f, Fig 11) wherein the carry chain comprises a first path (carry signal 54 through 20b) connecting a first series of logic elements (30, Fig 1) in the logic array block (10), wherein the logic

elements in the first series is a subset of the set of logic elements in the logic block array (30 is a subset of 20), a second path (carry signal 54 through 20c) connecting a second series of logic elements (30) in the logic array block wherein one or more of the logic elements (30) in the second series are not in the first series (each 30 in 20a is not in 20b, etc.). (Fig 1, 11, Column 5 Lines 14-20, 33-36 and Column 20 Lines 54-57)

Cliff does not directly disclose of a digital system comprising a programmable logic device including the carry chain of Claim 1.

Park discloses of programmable logic device (10) including a carry chain (of 30 within 20, Fig 7, 9) being used in a digital data processing system (900). (Fig 1-2, 7, 9 and 15, Column 18 Lines 6-7)

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement a programmable logic device with a carry chain in a digital system as taught by Park to speed up arithmetic processing in a digital data system while being configured to perform a variety of functions, including a controller, arbiter or an interface.

Allowable Subject Matter

5. Claims 18-26 are allowed. The following is an examiner's statement of reasons for allowance:

In regards to Claim 18, the prior art does not directly disclose of a programmable logic device comprising an array of logic elements grouped into a plurality of logic array blocks and a carry circuit disposed within a logic array block, the carry circuit configured

to operate in a first mode and a second mode wherein when the carry circuit operates in a first mode, a carry signal is propagated through a first series of logic elements within the logic array block and wherein when the carry circuit operates in a second mode, a carry signal is propagated through a second series of logic elements within the logic array block, the first series of the logic elements being a subset of the second series of logic elements, nor would it have been obvious to one of ordinary skill in the art to do so. Therefore, Claims 19-26 are also allowed by default as being dependent on the allowable Claim 18.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Claims 3-6, 8-15 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In regards to Claims 3, the prior art does not directly disclose of the carry chain of Claim 2 further comprising a multiplexer having a first input and a second input wherein when the first input is selected, a carry signal is propagated through the first series of logic elements and wherein when the second input is selected, a carry signal is propagated through the second series of logic elements, nor would it have been obvious

to one of ordinary skill in the art to do so. Therefore, Claims 4-6 are also objected to as being dependent on the objected Claim 3.

In regards to Claim 8, the prior art does not directly disclose of the carry chain of Claim 7 wherein the first multiplexer includes a first input connected to a beginning of the first series, a second input connected to an end of the first series, an output connected to a beginning of the second series and wherein the second multiplexer includes a first input connected to the end of the first series, and a second input connected to an end of the second series, nor would it have been obvious to one of ordinary skill in the art to do so.

In regards to Claim 9, the prior art does not directly disclose of a redundancy circuit connected to the first path and the second path, wherein the redundancy circuit is configured to skip a logic array block in a column of logic array blocks, nor would it have been obvious to one of ordinary skill in the art to do so. Therefore, Claim 10 is also objected to as being dependent on the objected Claim 9.

In regards to Claim 11, the prior art does not directly disclose of the carry circuit of Claim 1 further comprising a carry select circuit connected to the first path and the second path, wherein the carry select circuit is configured to provide a first pre-computed value and a second pre-computed value for a set of logic elements, nor would it have been obvious to one of ordinary skill in the art to do so. Therefore, Claim 12 is also objected to as being dependent on the objected Claim 11.

In regards to Claim 13, the prior art does not directly disclose of the carry chain of Claim 1 further comprising a first carry chain defined by the first path, at least a

second carry chain defined by the second path, wherein each of the logic elements of the second series are not in the first series, nor would it have been obvious to one of ordinary skill in the art to do so.

In regards to Claim 14, the prior art does not directly disclose of the carry chain of Claim 1 further comprising one or more metal layer option regions disposed within the first and second paths, wherein each metal layer option region includes a first layout and a second layout wherein a first region of the logic array block is bypass-able when the metal layer option regions are formed in accordance with the first layout and wherein a second region of the logic array block is bypass-able when the metal layer option regions are formed in accordance with the second layout, nor would it have been obvious to one of ordinary skill in the art to do so.

In regards to Claim 15, the prior art does not directly disclose of the carry chain of Claim 1 further comprising a first column of logic array blocks, each logic array block in the first column having a carry chain with the first path located in a top portion of the carry chain, and a second column of logic array blocks adjacent to the first column, each logic array block in the second column having a carry chain with the first path located in a bottom portion of the carry chain, wherein the second column is adjacent to the first column, nor would it have been obvious to one of ordinary skill in the art to do so.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Crawford whose telephone number is 571-272-6004. The examiner can normally be reached on Monday - Friday 7am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rex Barnie can be reached on 571-272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMC

REXFORD BARNIE
SUPERVISORY PATENT EXAMINER